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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,978	02/10/2004	I-Ping Chung	31715-00061	1305

24919 7590 09/22/2005

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EXAMINER

BARROW, JAMES G

ART UNIT	PAPER NUMBER
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3749

DATE MAILED: 09/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/775,978	Applicant(s) CHUNG ET AL	
	Examiner James G. Barrow	Art Unit 3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/10/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Loftus et al (6,007,325) in view of Benson et al (6,672,858). Loftus et al discloses a low emissions burner having a cylindrical housing 14, an air register or air flow control means 30, a circular burner tile 10 including primary fuel gas passageways 32, a plurality of fuel gas nozzles 40 positioned outside the burner tile with one or more gas nozzles 34 within the primary fuel gas passageways 32, a primary fuel gas nozzle 24 with a venturi 18 positioned around and above the primary fuel gas nozzle, and a flame stabilizing surface 19. However Loftus et al does not disclose the gas nozzles outside the tile with some discharging through primary gas passageways. Benson et al teaches a circular burner tile 13 with an exterior wall divided into sections by baffles (the structure between indentations 15 in figure 2) which extend in directions parallel to the axis of the burner having the same height (see figure 2) including primary fuel gas passageways 14, and a plurality of fuel gas nozzles 22 and 23 positioned outside the burner tile 13 with one or more gas nozzles 22 discharging through fuel gas primary fuel gas passageways 14 in the same field of invention for the purpose of recirculating "a significantly greater amount of furnace gases as compared to prior art designs.

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Surprisingly and unexpectedly we have found that recirculating such a large amount of the furnace gases dramatically reduces the amount of NO_x gases formed without causing flame instability" (C: 2, L: 27-32). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the burner tile and fuel nozzles of Benson et al in place of the burner nozzles and burner tile of Loftus et al in order to increase "the amount of furnace gases returned to the burner improves the mixing and dispersion of the fuel gas prior to combusting the fuel with air. By using the relatively inert furnace gases to disperse the fuel gas prior to mixing with the combustion air in the primary combustion zone, a cooler burning flame is achieved. A cooler flame in turn greatly reduces the undesirable formation of NO_x" (C: 2, L: 32-39). At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to have a burner tile with alternating walls having different heights, having different sloping angle to the burner tile opening, or where the burner housing is circular, square, triangular, polygonal, or any other shape because the Applicant has not disclosed that alternating walls having different heights, having different sloping angle to the burner tile opening, or where the burner housing is circular, square, triangular, polygonal, or any other shape provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well having a burner tile having alternating walls having different heights, having different sloping angle to the burner tile opening, or where the burner housing is circular, square, triangular, polygonal, or any other shape because the purpose of the invention is to

recirculate the exhaust gas of the furnace with air and fuel to reduce NO_x. Therefore, it would have been an obvious matter of design choice to modify Benson et al to obtain the invention as specified in claims 1-9, 14, and 16-20. Additionally in the disclosure states the "exterior sides of the wall are divided into sections by a plurality of radially positioned baffles attached thereto with alternate sections having the same or different heights and slanting towards the opening at the same or different angles" (P: 2, L: 18-21) and when the Applicant claims and discloses the burner housing can be "any shape" a burner housing having any shape would meet the bounds of the claims.

Response to Arguments

Applicant's arguments, see page 2, lines 1-7, filed 7/18/2005 with respect to the drawings have been fully considered and are persuasive. The objection of the drawings has been withdrawn.

Applicant's arguments filed 7/18/2005 have been fully considered but they are not persuasive.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Benson discloses the purpose of recirculating "a significantly greater amount of furnace gases

as compared to prior art designs. Surprisingly and unexpectedly we have found that recirculating such a large amount of the furnace gases dramatically reduces the amount of NO_x gases formed without causing flame instability" (C: 2, L: 27-32).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Regarding Applicant's argument that the combination of references does not suggest all limitations of the claimed invention, specifically Loftus et al or Benson et al do not teach a burner tile having alternate sections with different heights and slanting toward the opening into the furnace space at different angles or that the alternating sections have baffles. The Examiner rejected this on the basis of design choice reasoning that if the Applicant discloses "alternate sections having the same or different heights and slanting towards the opening at the same or different angles. Some or all of the sections, preferably every other section, have passageways formed therein for conducting primary fuel gas from outside the sections to within the wall" (P: 2, L: 19-23) in the application, then such limitations are a matter of design choice.

Regarding Applicant's argument that the invention claims radially positioned baffles and Loftus et al or Benson et al do not. It is the Examiner's position that Benson et al does. In combining Loftus et al with Benson et al the Examiner used the teaching that recirculating "a significantly greater amount of furnace gases as compared to prior art designs. Surprisingly and unexpectedly we have found that recirculating such a large amount of the furnace gases dramatically reduces the amount of NO_x gases formed without causing flame instability" (C: 2, L: 27-32) of Benson et al which performs the same function as the invention disclosed in the specification.

In response to applicant's argument that the invention creates a folded or flower shaped flame with a high turndown ratio that is not met by Loftus et al in view of Benson et al, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

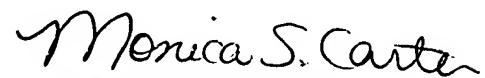
Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James G. Barrow whose telephone number is (571) 272-4870. The examiner can normally be reached on M-F, 9:30 A.M.-6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Monica S. Carter can be reached on (571) 272-4475. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


James Barrow


MONICA S. CARTER
PRIMARY EXAMINER